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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/966,655	09/28/2001	C. Bret Elzinga	6922.19	5235
21999	7590	05/25/2006	EXAMINER	
KIRTON AND MCCONKIE 1800 EAGLE GATE TOWER 60 EAST SOUTH TEMPLE P O BOX 45120 SALT LAKE CITY, UT 84145-0120			JARRETT, SCOTT L	
			ART UNIT	PAPER NUMBER
			3623	

DATE MAILED: 05/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/966,655

Applicant(s)

ELZINGA ET AL.

Examiner

Scott L. Jarrett

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This **Final** Office Action is in response to Applicant's remarks filed March 22, 2006. Applicant's amendment amended claims 1-4, 6 and 13-16. Currently Claims 1-16 are pending.

Response to Amendment

2. The Objection to the Title is withdrawn in response to Applicant's amendments to the Title.

The Objection to Claims 2, 6 and 14 is withdrawn in response to Applicant's amendments to Claims 2, 6 and 14.

Response to Arguments

3. Applicant's arguments filed March 22, 2006 have been fully considered but they are not persuasive.

Specifically Applicant's argue that the prior art of record, specifically Schaerf, fails to teach or suggest:

- "adjusting time value for a given event account fit within the framework at a selected time and day until the given event fits within the framework" (Remarks: Last Paragraph, Page 9) wherein one example of the adjusting includes "decreasing the amount of time a lecture or test would take" (Remarks: Paragraphs 2-3, Page 10);

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- “modifying the events themselves in order to populate the framework”
(Remarks: Paragraph 3, Page 10); and/or
- “calculating an optimization value based on preferred time conflicts, adjusting time value, delayed conflicts or time or day period conflicts among the plurality of events.”

In response to Applicant’s argument that the prior art fails to teach or suggest “adjusting time value for a given event account fit within the framework at a selected time and day until the given event fits within the framework” the examiner respectfully disagrees.

With respect to newly amended Claims 1 and 13 Schaerf teaches adjusting *any* of a plurality of event time values (start time, end time, duration, length, day/month/year, etc.) in order to schedule (fit) the event (class, exam, lecture, student, etc.) into the framework (timetable; i.e. Schaerf teaches “adjusting **a time value** for a given event that cannot fit within the framework at a selected time and day period until the event fits within the framework”, emphasis added) as evidenced by at least the following:

- “C: Move an already scheduled lecture to a free period....” (i.e. adjusting the time slot/period to which the lecture is scheduled, the time being an attribute/characteristic of the event which has been adjusted/modified; Page 10);
- “moving the lecture to a different period...” (Last Paragraph, Page 12);

- “the procedure finds an “equivalent” (defined in the paper) lecture already scheduled and reassigns it to a different period...” (Paragraph 4, Page 13);
- “A move consists in exchanging two lectures for a given teacher or moving a lecture to a different period.” (Paragraph 4, Page 14); and
- “Several authors also consider lectures of different length... allows one to specify that a course is composed of a certain number of periods which can be given in a variable number of lectures of different length.” (Section 3.3.3 Periods of variable length, Page 18).

In response to Applicant’s argument that the prior art of record fails to teach or suggest “modifying the events themselves in order to populate the framework (Remarks: Paragraph 3, Page 10) the examiner respectfully disagrees.

As discussed above Schearf teaches modifying/adjusting an events length (duration, number of classes, split classes/sections, etc.), time period/slot (Last Paragraph, Page 17; Section 3.3.3 Periods of variable length, Page 18), order, priority as well as a plurality of other constraints wherein the constraints represent both event properties/values and global parameters (Section 2.5.7, Page 13, Pages 10, 17-18).

In response to Applicant’s argument that the prior art of record fails to teach or suggest “calculating an optimization value based on preferred time conflicts, adjusting

time value, delayed conflicts or time or day period conflicts among the plurality of events” the examiner respectfully disagrees.

Schaerf teaches that generating a schedule filled with a plurality of events is commonly referred to as a timetabling problem, which is commonly formulated/modeled as an optimization problem (Section 1.2, Page 2). Schaerf further teaches that a plurality of well known methods/techniques can be used to solve the optimization problem wherein the methods/techniques each calculate one or more optimization values (e.g. penalty costs, objective function values, distance to feasibility, etc.; Tabu Search, Pages 35-36) based on preferred time conflicts, adjusting time value delay conflicts, or time or day period conflicts among the plurality of events.

For example in the case using a simulated annealing approach to solving the optimization problem the method for generating a schedule of a plurality of events utilizes several optimization values in order to identify the optimal schedule/solution (e.g. temperature, cooling rate and Δ ; Simulated Annealing, Page 36).

Further regarding independent Claims 1 and 13, it is noted that the features upon which applicant relies (i.e., decreasing the duration of a class period, Remarks: Paragraph 1, Page 10) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

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It is noted that independent Claim 5 was not amended in the amendment filed March 22, 2006 and therefore does not contain the new limitations as recited in amended Claims 1 and 13 and as discussed above.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Schaerf, A., A Survey of Automated Timetabling (Jan. 1999).

Regarding Claims 1, 5-11 and 13 Schaerf teaches a plurality of old and well known timetabling methods/processes applied, both manually and in an automated fashion, to school, course, examination and room scheduling wherein “The timetabling problem consists of scheduling a sequence of lectures between teachers and students in a prefixed period of time (typically a week), satisfying a set of constraints of various types.” (Abstract; Pages 1-2).

More specifically Schaerf teaches a method and system for generating a schedule (timetable, calendar, etc.) that is filled with a plurality of events (meetings, holidays, classes, lessons, appointments, etc.) comprising:

- defining a framework (base, baseline, calendar, master schedule, blank schedule, template, timetable, etc.) to serve as the schedule and to be populated (scheduled) with a plurality of events, the framework defining periods of time and days to be populated (periods, timeslots, etc.; Abstract; Page 1, Paragraphs 1-3; Page 2, Paragraphs 1-3; Section 2.5.1, Page 10; Pages 15-17; Appendix C, Pages 36-37);

- inserting at least one immutable (set, fixed, invariable, etc.) event (e.g. holiday, pre-assignments, unavailabilities; Section 3.3.1, Pages 17-18; Section 4.3.1, Page 25);
- populating the framework with the remaining plurality of events (Section 2.1, Pages 5-6; Section 2.5.1, Page 10);
- determining whether the selected/remaining plurality of events can populate the framework with conflict (clashes, overlap, intersection, etc.) within the periods of timed and days to be scheduled (Section 2.1, Pages 5-6, Section 2.5.1, Page 10; Section 2.5.5, Pages 12-13);
- adjusting a time value (e.g. start/end time/day, length, etc.) for a given event that cannot fit within the framework at a selected time/day period until the event fits in the framework (Section 3.3.3, Page 18; Section 4.3.3, Page 26);
- determining delays (lags, breaks, separation) allowed between selected plurality of events (Page 6, Last Paragraph; Page 16, Last Paragraph; Section 3.3.3, Page 18; Section 4.3.3, Page 26);
- allocating the allowed delays to optimize the schedule (e.g. event spreading; Page 6, Last Paragraph; Page 16, Last Paragraph)
- evaluating selected plurality of the events having a preferred time specifications (teacher/student preferences/priorities, time pattern, constraints, etc.; Section 2.5.7, Page 13, Pages 10, 17-18);
- allocating the selected plurality of events based on their preferred time specifications (Section 2.5.7, Page 13, Pages 10, 17-18);

- calculating an optimization value (cost, penalty, score, temperature, etc.) based on time, delay, *adjusting time value delay* or time/day conflicts (clashes) among the plurality of events (Section 1.2, Page 2; Section 4.2, Pages 24-25; Appendix C, Pages 36-37);

- determining whether the optimization value achieves a best-solution/threshold value (e.g. temperature ~0; Section 1.2, Page 2; Section 4.2, Pages 24-25; Appendix C, Pages 36-37); and

- performing event swapping (musical chairs, re-organization, re-scheduling, move, cancel, re-assignment, etc.) to improve the optimization value until the best-solution/threshold value is reached (Section 2.5.5, Pages 12-13; Section 4.3.3, Page 27).

Regarding Claims 2, 12 and 14 Schaerf teaches a system and method for generating a schedule further comprising:

- determining relationships between events placed within the framework (associations, pre-requisites, etc.; Section 2.1, Pages 5-6; Section 3.3.2, Pages 17-18); and

- re-evaluating the optimization value based on the event relationships (Section 2.1, Pages 5-6; Section 3.3.2, Pages 17-18).

Regarding Claims 3 and 15 Schaerf teaches a system and method for generating a schedule further comprising determining the optimization value based on events that

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have a frequency greater than one (Section 2.1, Pages 5-6; Section 2.4.1, Page 8; Section 3.1, Pages 15-16; Section 4.4.3, Page 27).

Regarding Claims 4 and 16 Schaerf teaches a system and method for generating a schedule further comprising determining the optimization value based on events that are to be excluded (e.g. pre-assignments, unavailabilities, etc.; Page 7).

Conclusion

THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Abramson et al., Simulated annealing cooling schedules for the school-timetabling problem (1999) teach a system and method for generating a schedule that is filed with a plurality of events.

- Goltz et al., University Timetabling Using Constraint Logic Programming (1999) teach a system and method for scheduling a plurality of events (courses, lectures, breaks, etc.) into a framework wherein the events are modified to fit into the schedule (e.g. length/duration, start/end time/day, location, delays, etc.) and the schedule takes into account a plurality of constraints/preferences.

- Dowsland et al., Solving a nurse scheduling problem with knapsacks, networks and tabu search teaches a system and method for generating a schedule that is filled with a plurality of events wherein the system/method calculates an optimization value and adjusts/modifies time, day or other conflicts/constraints among the plurality of events in order to generate an optimized schedule.


- Hasse et al., Course planning at Lufthansa Technical Training (1999) teach a system and method for generating a schedule for a plurality of events. Hasse et al. further teach well-known research into the scheduling of a plurality of events into a framework.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott L. Jarrett whose telephone number is (571) 272-7033. The examiner can normally be reached on Monday-Friday, 8:00AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hafiz Tariq can be reached on (571) 272-6729. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SJ 
5/23/2006


SUSANNA M. DIAZ
PRIMARY EXAMINER

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